



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

INCIDENTAL HARASSMENT AUTHORIZATION

Space Exploration Technologies Corporation (SpaceX), 1030 15th Street N.W., Suite 220E, Washington, DC 20005, is hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (16 U.S.C. 1371(a)(5)(D)) and 50 CFR 216.107 to take, by Level B harassment only, small numbers of marine mammals incidental to conducting Falcon 9 First Stage recovery activities in California and the Pacific Ocean offshore California, contingent upon the following conditions:

1. This Incidental Harassment Authorization (IHA) is valid from June 30, 2016 through June 29, 2017.
2. This IHA is valid only for Falcon 9 First Stage recovery activities at Vandenberg Air Force Base, in the Pacific Ocean offshore Vandenberg Air Force Base, and at the Northern Channel Islands, California.
3. General Conditions
 - (a) A copy of this IHA must be in the possession of SpaceX, its designees, and work crew personnel operating under the authority of this IHA.
 - (b) The species authorized for taking are the Pacific harbor seal (*Phoca vitulina richardii*), California sea lion (*Zalophus californianus*), Steller sea lion (eastern Distinct Population Segment, or DPS) (*Eumetopias jubatus*), northern elephant seal (*Mirounga angustirostris*), northern fur seal (*Callorhinus ursinus*), and Guadalupe fur seal (*Arctocephalus townsendi*).
 - (c) The taking, by Level B harassment only, is limited to the species listed in condition 3(b). See Table 1 (attached) for numbers of take authorized.
 - (d) The taking by injury (Level A harassment), serious injury, or death of any of the species listed in condition 3(b) of the Authorization or any taking of any other species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this IHA.
4. Mitigation Measures

The holder of this Authorization is required to implement the following mitigation measure:



- (a) Unless constrained by human safety or national security concerns, launches will be scheduled to avoid, whenever possible, boost-backs and landings during the harbor seal pupping season of March through June.

5. Monitoring

The holder of this Authorization is required to conduct marine mammal and acoustic monitoring as described below:

- (a) SpaceX must notify the Administrator, West Coast Region, NMFS, by letter or telephone, at least 2 weeks prior to activities possibly involving the taking of marine mammals;
- (b) To conduct monitoring of Falcon 9 First Stage recovery activities, SpaceX must designate qualified, on-site individuals approved in advance by NMFS;
- (c) If sonic boom model results indicate that a peak overpressure of 1.0 pounds per square foot (psf) or greater is likely to impact VAFB, then acoustic and biological monitoring at VAFB will be implemented;
- (d) If sonic boom model results indicate that a peak overpressure of 1.0 psf or greater is predicted to impact the Channel Islands between March 1 and June 30; 1.5 psf or greater between July 1 and September 30; and 2.0 psf or greater between October 1 and February 28, monitoring of haulout sites on the Channel Islands will be implemented. Monitoring will be conducted at the haulout site closest to the predicted sonic boom impact area;
- (e) Monitoring will be conducted for at least 72 hours prior to any planned Falcon 9 First Stage recovery and continue until at least 48 hours after the event;
- (f) For launches during the harbor seal pupping season (March through June), follow-up surveys will be conducted within 2 weeks of the Falcon 9 First Stage recovery to monitor for any long-term adverse effects on marine mammals;
- (g) If Falcon 9 First Stage recovery is scheduled during daylight, time-lapse photography or video recording will be used to document the behavior of marine mammals during Falcon 9 First Stage recovery activities;
- (h) Monitoring will include multiple surveys each day that record the species, number of animals, general behavior, presence of pups, age class, gender and reaction to noise associated with Falcon 9 First Stage recovery, sonic booms or other natural or human caused disturbances, in addition to recording environmental conditions such as tide, wind speed, air temperature, and swell; and
- (i) Acoustic measurements of the sonic boom created during boost-back at the monitoring location will be recorded to determine the overpressure level.

6. Reporting

The holder of this Authorization is required to:

- (a) Submit a report to the Office of Protected Resources, NMFS, and the West Coast Regional Administrator, NMFS, within 60 days after each Falcon 9 First Stage recovery action. This report must contain the following information:
 - i. Date(s) and time(s) of the Falcon 9 First Stage recovery action;
 - ii. Design of the monitoring program; and
 - iii. Results of the monitoring program, including, but not necessarily limited to:
 - 1. Numbers of pinnipeds present on the haulout site prior to the Falcon 9 First Stage recovery;
 - 2. Numbers of pinnipeds that may have been harassed as noted by the number of pinnipeds estimated to have moved more than one meter or entered the water as a result of Falcon 9 First Stage recovery activities;
 - 3. For pinnipeds estimated to have moved more than one meter or entered the water as a result of Falcon 9 First Stage recovery noise, the length of time pinnipeds remained off the haulout or rookery;
 - 4. Any other observed behavioral modifications by pinnipeds that were likely the result of Falcon 9 First Stage recovery activities, including sonic boom; and
 - 5. Results of acoustic monitoring including comparisons of modeled sonic booms with actual acoustic recordings of sonic booms.
- (b) Submit an annual report on all monitoring conducted under the IHA. A draft of the annual report must be submitted within 90 calendar days of the expiration of this IHA, or, within 45 calendar days of the renewal of the IHA (if applicable). A final annual report will be prepared and submitted within 30 days following resolution of comments on the draft report from NMFS. The annual report will synthesize the information from the 60-day post-activity reports, including but not necessarily limited to:
 - i. Date(s) and time(s) of the Falcon 9 First Stage recovery action;
 - ii. Design of the monitoring program; and
 - iii. Results of the monitoring program, including, but not necessarily limited

to, the requirements described in 6(a)(iii) of this Authorization, in addition to:

1. Any cumulative impacts on marine mammals as a result of the activities, such as long term reductions in the number of pinnipeds at haulouts as a result of the activities.

(c) Reporting injured or dead marine mammals:

- i. In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by this IHA (as determined by the lead marine mammal observer), such as an injury (Level A harassment), serious injury, or mortality, SpaceX will immediately cease the specified activities and report the incident to the Office of Protected Resources, NMFS, and the West Coast Regional Stranding Coordinator, NMFS. The report must include the following information:

1. Time and date of the incident;
2. Description of the incident;
3. Status of all Falcon 9 First Stage recovery activities in the 48 hours preceding the incident;
4. Description of all marine mammal observations in the 48 hours preceding the incident;
5. Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility);
6. Species identification or description of the animal(s) involved;
7. Fate of the animal(s); and
8. Photographs or video footage of the animal(s).

Activities will not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with SpaceX to determine what measures are necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. SpaceX may not resume their activities until notified by NMFS via letter, email, or telephone.

- ii. In the event that SpaceX discovers an injured or dead marine mammal, and the lead observer determines that the cause of the injury or death is unknown and the death is relatively recent (e.g., in less than a moderate state of decomposition), SpaceX will immediately report the incident to the Office of Protected Resources, NMFS, and the West Coast Regional Stranding Coordinator, NMFS.

The report must include the same information identified in 6(c)(i) of this Authorization. Activities may continue while NMFS reviews the circumstances of the incident and makes a final determination on the cause of the reported injury or death. NMFS will work with SpaceX to determine whether additional mitigation measures or modifications to the activities are appropriate.

- iii. In the event that SpaceX discovers an injured or dead marine mammal, and the lead observer determines that the injury or death is not associated with or related to the activities authorized in the IHA (e.g., previously wounded animal, carcass with moderate to advanced decomposition, scavenger damage), SpaceX will report the incident to the Office of Protected Resources, NMFS, and the West Coast Regional Stranding Coordinator, NMFS, within 24 hours of the discovery. SpaceX will provide photographs or video footage or other documentation of the stranded animal sighting to NMFS. The cause of injury or death may be subject to review and a final determination by NMFS.

7. Modification and suspension

This Authorization may be modified, suspended or withdrawn if the holder fails to abide by the conditions prescribed herein, or if NMFS determines that the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals.

for Perry GAYACOD
Donna S. Wieting,
Director, Office of Protected Resources,
National Marine Fisheries Service.

MAY 19 2016

Date

Table 1: Authorized take numbers, by species

Species	Authorized Take
Harbor Seal	12,942
California Sea Lion	56,496
Northern Elephant Seal	1,020
Steller Sea Lion	120
Northern Fur Seal	3,000
Guadalupe Fur Seal	6